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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,262	04/13/2005	Klaus Vossenkaul	75984-323241	4814

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EXAMINER
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GRUN, ROBERT J

ART UNIT	PAPER NUMBER
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4111

MAIL DATE	DELIVERY MODE
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05/13/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/507,262	<b>Applicant(s)</b> VOSSENKAUL ET AL.	
	<b>Examiner</b> ROBERT J. GRUN	<b>Art Unit</b> 4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 4-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/10/2004 and 03/06/2006</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayano (US Patent No. 4,061,821) in view of Ryan (US Patent No. 2,456,650).

- Regarding Claims 1 and 3: Hayano teaches a method for making a “a hollow fiber type semipermeable membrane” (emphasis added), the method comprises coating a braid having a central hollow portion (i.e. fabric tube) and an outer diameter of 1.8 mm (col. 2 lines 64-66 and col. 8 lines 38-49) with a polymer solution, and carrying the fiber through the precipitation bath creating a composite membrane that is reinforced by the fibrous braid (col. 3 lines 4-6; figures 1-2). Hayano also teaches a nozzle that guides the braid and coats the braid with the polymer solution (col. 2 lines 66-68). Hayano differs from claim 1 in that, the hollow filament is guided through the precipitation bath on rollers instead of being guided via fluid forces (i.e. free of mechanical means) as claimed. However, Ryan teaches a process for coating filaments including a hollow filament and suggests providing a coagulation bath tube, arranged vertically, (10) concentric to an inner coating tube, also arranged vertically, having an exit nozzle (14) in order to ensure “a true centering of” a coating

material on each filament (col. 1 lines 13-24; col. 3 lines 53-60; figures 1-2). As clearly illustrated in figures 1-2, there is no mechanical means which contacts a filament as it passes through a tubular coagulation bath. It would have been obvious in the art to use a tubular coagulation bath such as the one shown in figures 1-2 of the Ryan patent in the process of Hayano in order to create a true centering of a coagulated coating material on a tubular hollow braid. As for the limitation in claim 1 requiring exiting the precipitation (coagulation) bath via a nozzle, whereby "... liquid exerts a tensile force stabilizing" on a coated fabric tube, the coagulation tube in Ryan is tapered, creating a nozzle like opening at its lower end, so as to create a viscous (tensile) flow as the filament leaves the precipitation bath which is demonstrated by arrows in figure 2. The viscous laminar flow created by the narrowing of the capillary (10) would form a nozzle creating a flow effect which centers the hollow filament and allows even coating of said filament with the polymer (figure 2). Therefore, this limitation is reasonably expected to naturally flow from the modified process of Hayano, where a coagulation bath tube (10) of Ryan is provided concentric to an inner coating tube having an exit nozzle (14), since viscous laminar flow surrounding a fabric tube would intrinsically exert a stabilizing tensile force to the fabric tube.

- Regarding Claim 2: Hayano does teach a feed roll (col. 2 line 65) but does not mention an advancing drive, however an advancing roller is visible in figure 1 of Ryan. One of ordinary skill in the art at the time of invention would have found it obvious to employ an advancing drive to a feed roll in the modified process of

Hayano to automatically advance the fiber and also to control the rate at which the filament passed through the coating device.

- Regarding Claim 7: One of ordinary skill in the art at the time of invention would have found it obvious to cut the continuous fiber to predefined lengths suitable for desired end-use of the hollow fiber membrane, such as a filter unit.

3. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayano (US Patent No. 4,061,821) in view of Ryan (US Patent No. 2,456,650) as applied to claim 1 above, in further view of Juliar et al. (US Patent No. 5,395,468).

- Regarding Claims 8-9: Hayano and Ryan fail to teach the cutting or sealing of the finished composite membrane tubes. Juliar teaches forming a hollow fiber separation device in which hollow fibers are cut to a suitable dimension and then sealed at an open end of the hollow fibers (claim 5). It would have been obvious in the art to cut and seal the hollow fibers in the modified process of Hayano in order to form a hollow fiber separation device such as the one suggested by Juliar et al.

#### Objection

4. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- Regarding Claims 4-5: Hayano makes no mention of controlling bath temp or solvent concentration in the bath or the method of providing or removing the precipitation liquid from the precipitation bath, however Ryan suggest heating the

coagulation carrier liquid and feeding it from the top of the secondary tube (col. 2 lines 13-18). Neither of these references teaches having a "partial stream" of precipitation agent exiting through a nozzle and "other part of the supplied precipitation agent is drawn off from the pipe at a different location". Claim 5 is allowable for being dependent on claim 4.

- Regarding Claim 6: Neither Hayano nor Ryan teach further conditioning of the coated fiber without mechanical contact. Ryan does show further conditioning of the fiber however the fiber is passed through the secondary bath on rollers.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT J. GRUN whose telephone number is (571)270-5521. The examiner can normally be reached on Monday-Thursday 07:30-17:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam C. Yao can be reached on (570)272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4111

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RG

/Sam Chuan C. Yao/

Supervisory Patent Examiner, Art Unit 4111